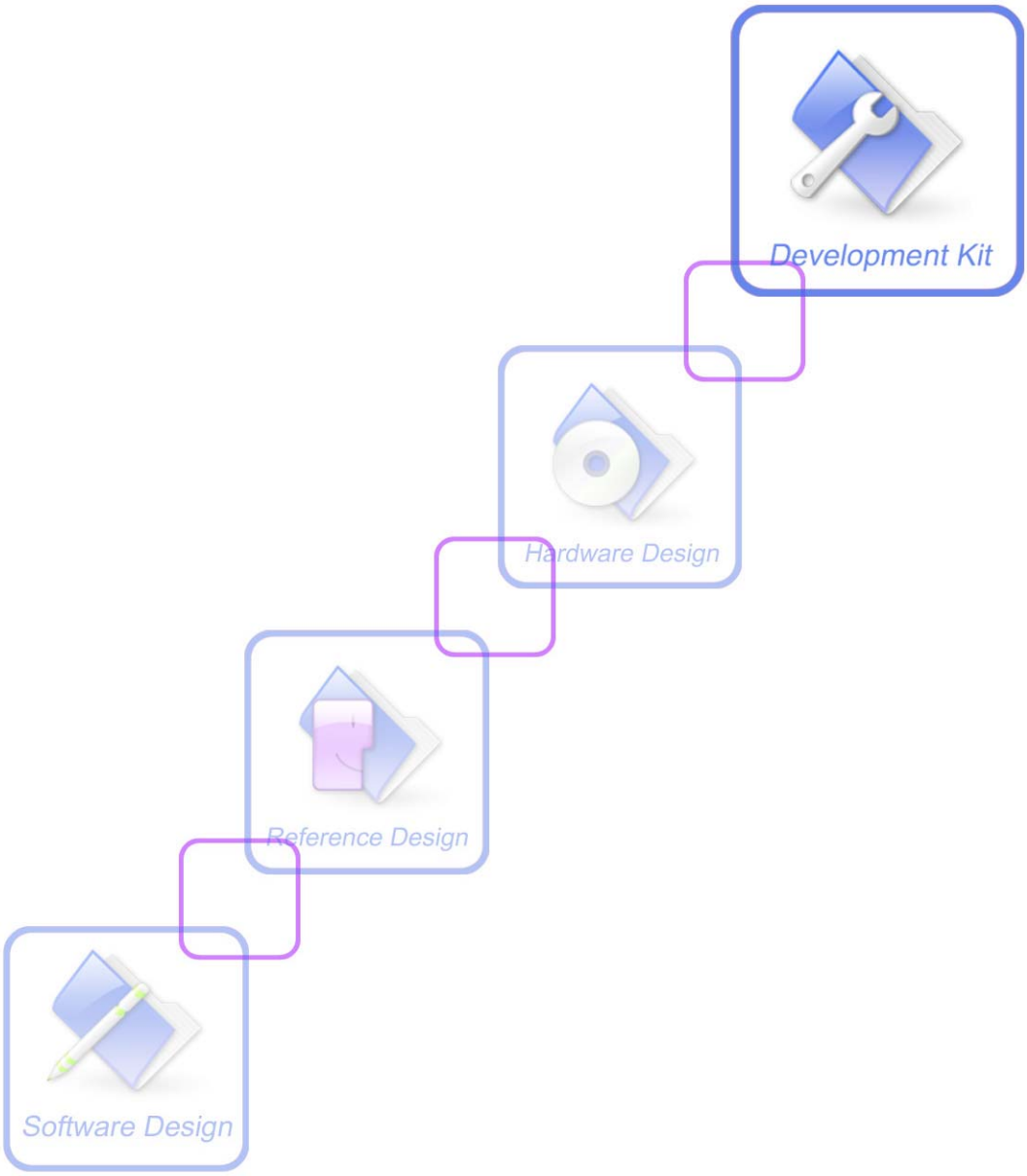
UART Dload **Application Note**



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Version History

Version	Chapter	Comments	Author
V0.01	New Version		Roma
V0.02	Modified version	Add QDL user manual and AT command	Roma

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Contents

Version History 2
Contents 3
1. Introduction 1
1.1 Overview 1
1.2 References 1
1.3 Terms and Abbreviations 1
2. Upgrading procedure 1
2.1 Download tool 1
2.1.1 Architecture 1
2.1.2 Peripheral Hardware Condition 1
2.1.3 Software settings 2
2.1.4 UDL Functions 3
2.2 UART configuration 5

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1. Introduction

1.1 Overview

This document will depict how to upgrade firmware through UART supplied by SIM52XX.

1.2 References

[1] SIMCOM_SIM52XX_ATC_EN_Vx.xx.doc.

1.3 Terms and Abbreviations

For the purposes of the present document, the following abbreviations apply:

- AT ATtention; the two-character abbreviation is used to start a command line to be sent from TE/DTE to TA/DCE

2. Upgrading procedure

2.1 Download tool

UDL is a tool developed under VC6.0 environment, and must be used in a computer with WINDOWS XP system. It just can be used to upgrade firmware for SIM52XX modules through UART.

2.1.1 Architecture

UDL has two folders, named “data” and “QDN Backup”. The main execute file is UDL.exe. When one wants to use UDL, some configuration in the file “config.ini” should be set at first.

Under the folder “data”, there should be the firmware packet “KPRBL”, which is the new version being downloaded to SIM52XX modules.

Under the folder “QDN Backup”, if one sets the configuration in the file “config.ini” to backup QDN, there will be a file “backup.qdn” saved some RF setting for SIM52XX modules. After restore the file “backup.qdn” to one SIM52XX module, the file will be renamed to “*.qdn”, which “*” is the IMEI number of the SIM52XX module.

2.1.2 Peripheral Hardware Condition

In order to use UDL successfully, there must be some peripheral hardware condition:

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UART line: connect the SIM52XX module to one PC, and its COM port should be known and set for UDL.
SIM52XX module: the target to which UDL is used to download the firmware.

2.1.3 Software settings

There are some settings of UART for both SIM52XX modules and UDL.

2.1.3.1 UART setting for SIM52XX modules

The main settings must be finished by using the related AT command, such as AT+IPR, AT+CDIPR,AT+CUDLOADS and AT+CUDIAG. The usage of these commands will be mentioned in ATC documents.

2.1.3.2 UART setting for UDL

In the file "config.ini", there are some items to choose the functions of UDL and set UART baud rate.

[comport]:
port=COM*

This item is used to set UART COM port indicated by the host compute, for example, UART COM port is "COM1" in the most cases. This item must be set all the time.

[uart baud rate]:
baudrate=115200

This item is used to set UART baud rate for transmitting and receiving data. And this setting should be consistent with the setting of SIM52XX modules. This item must be set all the time.

[amss only]:
enable=1

This item is used to set the part of the firmware which should be downloaded to SIM52XX module. AMSS is the partition that includes all of the functions of SIM52XX modules, except the bootloader of SIM52XX modules. To set this item "enable = 1", its main purpose is to protect SIM52XX can boot up if there are some errors when upgrading firmware or some other unexpected errors occurred. This item should be set together with the download item.

[download]:
enable=1

This item is used to set the function of UDL to upgrade the firmware. It is the main usage of UDL.

Note: download item will switch SIM52XX module from normal mode to download mode, so the SIM52XX module will be reset after finishing download.

[backup QDN]:
enable=1

Some RF settings and information are stored in the flash memory of SIM52XX modules. When the partition of the flash is mismatched, UDL will erase the whole flash, so the data stored in the flash memory will be cleaned.

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At this time, without the RF settings and information, SIM52XX modules cannot work normally. UDL can back up these data into the file “backup.qdn” at first. After download the new firmware to the flash memory, UDL writes these data into SIM52XX modules by using the next item choice.

[restore QDN]:

enable=1

After backing up QDN file, UDL should restore them into SIM52XX modules. When UDL finishes restoring QDN successfully, the file “backup.qdn” will be renamed to “*****.qdn” mentioned by the above.

2.1.4 UDL Functions

From the above items, UDL can do some special functions depending on what user sets.

2.1.4.1 Download

Uses can configure the settings like this:

```
[comport]
port=COM106

[uart baud rate]
baudrate=115200

[amss only]
enable=0

[download]
enable=1

[backup QDN]
enable=0

[restore QDN]
enable=0
```

2.1.4.2 Back up QDN& download

Uses can configure the settings like this:

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```
[comport]
port=COM106

[uart baud rate]
baudrate=115200

[amss only]
enable=0

[download]
enable=1

[backup QDN]
enable=1

[restore QDN]
enable=0
```

2.1.4.3 Restore QDN

Uses can configure the settings like this:

```
[comport]
port=COM106

[uart baud rate]
baudrate=115200

[amss only]
enable=0

[download]
enable=0

[backup QDN]
enable=0

[restore QDN]
enable=1
```

Note:

1: When user uses UDL to back up QDN, and finish backing up, there will be a “backup.qdn” file in the “QDN backup” folder.

2: When user uses UDL to restore QDN, UDL will detect if there is a “backup.qdn” file in the “QDN backup” folder.

3: If user has finish restored a QDN file to one module, the QDN file will be renamed. Then user wants to restore the QDN file to another module, user should change the QDN file name to “backup.qdn”.

Note: the comport and UART baud rate should be set, and they depend on one’s device and module’s UART baud rate configuration.

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2.2 UART configuration

When one wants to use UART to upgrade firmware, UART baud rate should be set at first.

One can set UART baud rate by using the related AT command. AT+IPR is to set current baud rate supported by SIM52XX module. AT+CDIPR is to set download baud rate supported by SIM52XX module. Please confirm that the baud rates set by these two commands is consistent. The default baud rate supported by these two commands is 115200 bps. So far, only some baud rate is supported by AT+CDIPR when UART download. The following are examples:

Before UDL works, user must configure UART of SIM52XX module.

AT+IPR=115200 //set the current baud rate
OK
AT+CDIPR = 2 //set the baud rate when module goes into download mode
OK
AT+CUDLOADS = 1 //using uart download.
OK
AT+CUDIAG //set UART works as DIAG service.
OK

Then user should copy the whole firmware packet “KPRBL” to the “data” folder. When doing this, please confirm that there is no any other “KPRBL” folder in the “data” folder. So if there is a old firmware packet, please delete it and then copy the new packet into the “data” folder.

After setting UART configuration, one should use AT+CUDIAG to switch UART from AT service to DIAG service.

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